

# **South Dakota Department of Agriculture Wildland Fire Suppression Division**

## **Engine Operations Section**



## **Seasonal Handbook**



# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **Mission Statement**

The primary mission of the engine crew program is to provide safe, organized, and skilled engine crews for all wildland fire management activities. The engine crews in this program represent fire fighting resources that build their professional reputations on integrity, quality and productivity. Engine crew members will utilize their skills and experience to provide training and mentoring in fire suppression and hazardous fuels reduction activities.

# **Introduction**

This handbook was designed to be utilized in conjunction with the “Fireline Handbook”, “Incident Response Pocket Guide”, “Interagency Standards for Fire and Aviation Operations” and relevant State policies. At no time should any information found within this book be followed if it clearly is in violation of local, state or federal law. In addition, if following the advice of this handbook would cause a safety risk the activity should be reevaluated before proceeding.

It is the responsibility of each member to read and become familiar with the items found within this handbook. From time to time certain policies will be added to and deleted from this book; it will be the members responsibility to update this book as needed and to learn new policy.

Members not adhering to the policies and guidelines found within this book may be subject to disciplinary actions.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

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Crewmember Agreement

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section outlines the normal duties and expectations of a crew member assigned to a wildland fire engine crew.

## **DUTIES:**

Although not inclusive, the following is a list of duties or activities that a member may encounter on a day to day basis.

- Physical Training (PT) is conducted daily and may include various aerobic and muscular fitness activities
- Respond to and fight wildland fires within South Dakota
- Respond to and fight wildland fires in other states
- Respond to other emergency incidents
- Provide fuels modification treatments
- Complete burn barrel and fireplace inspections
- Participate in prescribed burn projects
- Maintains tools and equipment
- Physical manual labor
- Operate power tools
- Operate a wildland fire engine
- Low level flights in helicopters
- Hiking in mountainous terrain
- Carrying heavy loads while working
- Lift 65 pounds
- Work in extreme weather conditions (hot & cold)
- Work long hours
- Work weekends and holidays
- Work extended periods of time (up to 21 days straight)
- Travel long distances from home
- Work in hazardous conditions
- Other duties as assigned
- Buildings/grounds maintenance

## **EXPECTATIONS**

Attitude is paramount. We can maintain our individuality but still base our views and actions from an engine crew perspective. Morale/attitude is the single most important factor with any crew. Disagreements will be solved for the benefit of the entire engine crew.

On any size crew, the sum of the parts is safer, stronger and more efficient than individuals. Working on the engine crew requires a commitment. The duty of all crew members is to be technically proficient in job skills,

and personally responsible for actions and behavior. You must strive to be the best and go above and beyond what others are willing to do by providing the engine crew with your best effort during physically and mentally taxing situations. You must have the strength to maintain your physical performance, respect for others and personal integrity under adverse conditions and in the face of criticism.

This is a team. You are responsible for your own actions but you are also expected to look out for everyone's safety. You are expected to be productive, work and learn. People on the ground put out fires, and all the fancy hardware in the world does not work without dedicated people on the line. If you are proficient in your job and perform basic tasks well, we will work well together. Know, respect and help your co-workers. The engine crews are identified by our name; logo and any actions which bring shame or a bad reputation are grounds for dismissal.

## **VISUAL OR SYMBOLIC DISPLAYS**

Each employee will refrain from displaying any articles of clothing that is; gang related, partisan political view points, or any sexual innuendo. This will not be tolerated by the Division of South Dakota Wildland Fire Suppression. Disciplinary action may be taken by your supervisor



# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE**

This section describes the engine crew's position on operating in non-traditional roles.

## **POLICY**

The engines may be called upon to assist other agencies in operations other than Wildland firefighting. This includes, but is not limited to Floods, Search & Rescue, Disaster Relief and Logistical support like providing man power for shelters and emergency feeding operations.

If an outside agency requests assistance with an incident other than a Wildland fire, the Assistant Chief of Operations or WFS Duty Officer will make a determination of whether the request will be honored or denied. At no time will members be required to perform any function for which they are not properly trained or equipped.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section outlines the division's stance on handling & responding to non-wildland fire incidents.

## **POLICY:**

Engines will not usually respond to Medical Aid, Vehicle fires or Structure fires. The crew may respond to these types of incidents if requested by the agency having jurisdiction, and only to operate in a support role. At no time will any engine crew member perform duties for which they are not trained and equipped. In all cases, crew member safety will be a priority.

## **MEDICAL EMERGENCIES**

If the engine comes upon a medical emergency, the members will be expected to call 911 or contact GPC and provide First Aid until a higher level care provider arrives on scene. Members of the engine crew are only authorized to perform up to the level of their certification, advanced procedures are not permitted.

## **VEHICLE FIRES**

If the engine comes upon a vehicle fire the following actions may be taken until the local fire agency arrives. Ensure life safety, avoid the smoke, prevent the spread of fire to the wildland areas, secure the area, and call 911 or contact GPC.

## **STRUCTURE FIRES**

If the engine comes upon a structure fire the following actions may be taken until the local fire agency arrives. Ensure life safety, avoid the smoke, prevent the spread of fire to the wildland areas, secure the area, and call 911 or contact GPC.

## **HAZARDOUS MATERIALS**

If the engine comes upon a Haz-Mat situation the following actions should be taken until the local response agency arrives. Ensure life safety, call 911 or contact GPC, without approaching the scene try to determine the material involved. Isolate the area keeping note of wind direction and any run-off. Individuals that may have been exposed should be kept separate from non-exposed individuals and should remain on-scene until decontaminated by qualified individuals.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section describes the normal work hours expected. This section also describes non-standard working hours that may be experienced by engine crewmembers.

## **STANDARD WORK HOURS:**

Engine crews are scheduled to work a 40 hour work week. Start time, end time and days off will vary by the needs of the engines and the work to be performed. Work weeks will be five 8 hour days in a week. A one hour, non-paid lunch time will be assigned each day; members may be required to bring a lunch to work each day. Breaks will be taken as needed and will be on the clock. Any deviation from the above schedule must be approved by their supervisor.

## **OVERTIME:**

The accrual of overtime during a standard work week is not the norm and should not be expected. For day to day operations and project work, overtime must be approved before it occurs. During fires and other emergencies overtime may be accrued as needed to meet the operational objectives of the incident. All overtime will be paid at time and one half for every hour worked over 40 in a week.

## **EMERGENCY ASSIGNMENTS:**

Emergency assignments, such as fires, floods and other disasters may require longer work hours to meet the operational objectives of the incident. As such, engine members may expect to work up to 16 hours a day for extended (up to 21 days) periods of time. At times it will be required to work 24 or more hours in a row to achieve stabilization of an emergency incident. While assigned to an incident shift hours will vary and may include night work and as such crew members should not expect to be able to return home at the end of a shift. During emergencies meal breaks and regular breaks may be suspended.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section outlines how members will receive pay checks and per diem checks.

## **POLICY:**

The pay cycle is bi-monthly based on a 40 hour work week that starts and ends each Friday at midnight. Pay days will be the 1<sup>st</sup> and 16<sup>th</sup> of each month unless those days fall on a weekend or holiday in which case pay will be distributed on the first business day preceding. State policy requires that all payroll and per diem checks be automatically deposited in the employees' bank account. Employees that do not have a bank account may be issued a payroll card, please ask your Division Chief about this option.

## **PER DIEM:**

Per Diem will be paid to an employee who has incurred an approved cost while performing the duties of the job. Normal per diem includes meals and lodging while in travel status. Employees will be paid back according to the predetermined per diem rates for the State (Division Chief has a copy). Employees should be prepared to pay for meals and lodging while traveling to and from an incident.

See Attached for Per Diem Rates and example Travel Voucher.

## **FIRE TIME**

The Lead, Rapid City, Custer State Park and Hot Springs Division Chief's will ensure that all seasonal employees they supervise will code the regular and fire timesheets in the following manner:

Regular Budget (9005): Use for all regularly scheduled work days for base 8 hours worked when the grasslands or forest fire danger for that day is Low or Moderate. The fire danger rating can be determined by calling or e-mailing Great Plains Dispatch or by logging in on the Division website.

Fire Time Coded against the Regular Budget (Fire1): Use for coding base 8 hours when the seasonal firefighter works a fire on the State's jurisdiction on state and private land incident when the fire danger is Low or Moderate. These fires will have state fire numbers starting with the letters SFN or SFM.

Fire Time Coded against the Fire Suppression Fund (Fire2): Use for coding base 8 hours when seasonal firefighters work on federal incidents or federal prescribed burns. These fire numbers will start with FFN, FFM, PBF, or OUT. Also use for coding base 8 hours (both fire and non-fire) when the fire danger is High, Very High, or Extreme. This code can be used to pay regular time for a three hour callback after business hours for a fire or false alarm when the incident time does not exceed three hours and the firefighter will have to code regular time because of not meeting the 40 hour workweek requirement for overtime compensation or because the seasonal employee did not work all of the three hours when called back in after business hours.

Fire Overtime Coded against the Fire Suppression Fund (Fire3): Use for coding all overtime on an incident or emergency fire staging regardless of jurisdiction. Overtime for federal prescribed burn projects will also be coded in this manner. Overtime for state employees is defined by Bureau of Personnel Policy as any hours worked in excess of 40 hours within the workweek. The workweek for the South Dakota Department of Agriculture runs from midnight of Friday to the next Friday, ending at midnight.

Flex Hours and Non-Fire Overtime: All non-fire overtime must be approved by the Wildland Fire Coordinator in advance of the anticipated overtime. This will be coded against the regular budget. Flex hours must be used within the current work week and as directed by the Division Chief.



# IN-STATE AND OUT-OF STATE TRAVEL EXPENSES & REQUIREMENTS

All travel expense checks come from the Fiscal Office. If you move or change your address, PLEASE send a notice of your change of address with your SS# by e-mail to Brenda Even, Paul Hoerner or Nyla Sprinkel.

<u>IN-STATE</u>	MAXIMUM MEALS/\$26.00 PER DAY				LODGING/\$45.00 PLUS TAX	
					see below for motel rate	
<u>TRAVEL RATES</u>	BREAKFAST	\$5.00	LEAVE BEFORE	5:31 A.M.	RETURN AFTER	7:59 A.M.
	LUNCH	\$9.00	LEAVE BEFORE	11:31 A.M.	RETURN AFTER	12:59 P.M.
	SUPPER	\$12.00	LEAVE BEFORE	5:31 P.M.	RETURN AFTER	7:59 P.M.

**EVENING SUPPER** \$2.00 May be claimed if you are working (not traveling) at night (Night Patrol or Night Spawning)  
You must LEAVE BEFORE 8:01 P.M. AND RETURN AFTER 1:59 A.M. Unless you have already claimed the Daily Maximum of \$26.00.

<u>OUT-OF-STATE</u>	MAXIMUM MEALS/\$36.00 PER DAY				LODGING/\$150.00 PLUS TAX	
					<b>\$50.00 WITH PRIOR APPROVAL</b>	
<u>TRAVEL RATES</u>	BREAKFAST	\$8.00	LEAVE BEFORE	5:31 A.M.	RETURN AFTER	7:59 A.M.
	LUNCH	\$11.00	LEAVE BEFORE	11:31 A.M.	RETURN AFTER	12:59 P.M.
	SUPPER	\$17.00	LEAVE BEFORE	5:31 P.M.	RETURN AFTER	7:59 P.M.

OUT OF STATE Vouchers must include the out of State Approval. Agenda and Airline Ticket

**Private Vehicle Mileage Reimbursement:**      **High Rate**      \$0.32/mile      **Low Rate**      \$0.20/mile  
**You must have Fleet & Travel Approval for High Rate.**

Use of Private car for Out-of State Trips: Two day travel each way allowed but mileage - NOT TO EXCEED AIRFARE.

**MOVING CODE 51023100**      May claim high mileage one-way with private vehicle  
(When moving from old station to new station)

<u>CODES-IN-STATE</u>	MEALS & LODGING	52031000	MEALS ONLY	52031400
	LOW MILEAGE	52030200	HIGH MILEAGE	52030300
	Nonemployment Travel	52031300	PARKING-FEES	52031200
<u>CODES-OUT-OF-STATE</u>	MEALS & LODGING	52033000	MEALS ONLY	52033400
	LOW MILEAGE	52032200	HIGH MILEAGE	52032300
	WORKSHOP CODE	52041600	TAXI CODE	52032800
	PARKING-FEES	52033200	CAR RENTAL	52032800
	Nonemployment Travel	52033300		

Meals must be deducted from Registration fees and put under meals on the travel detail sheet. Please remember to attach the Agenda's for all workshops to your travel vouchers. We only need the ONE ORIGINAL COPY of your travel detail sheet with ONE CODING SHEET. Please put the dates of travel on the coding form.

If they do not list the cost of the meal the amounts deducted from registration are the state rates.  
The meals are sometimes listed in the registration. When they are listed as Follows:

Reg fee	\$30.00	List	<b>\$44.00</b>	under Misc Expense (\$14.00 added to reg fee)
lunch	\$10.00	List	\$7.00	under Meals (the \$3.00 is not reimbursed)
banquet	\$25.00	List	\$11.00	under Meals
		List	<b>\$14.00</b>	under Misc. Expense (adding the \$14.00 to the reg fee)

**Only one banquet fee per registration over the state's rate for meals can be added to the reg fee.**

**If you have questions on travel requirements please call Brenda Even at 393-8115.**

## TRAVEL PAYMENT DETAIL

Not Valid Unless Accompanied by a Travel Voucher Coding Form.

**Name:** Tom Smith

[illegible]

PURPOSE OF TRAVEL:

Subtotals

0

\$0.00

\$54.00

\$0.00

\$0.00

**Grand Total**

\$54.00

### Apply to Advance

\$0.00

AMOUNT REIMBURSABLE

\$54.00

I declare and affirm under the penalties of perjury that this claim is in all things, true and correct. I further agree to comply with the provisions of the Civil Rights Act of 1964 and regulations issued thereunder relating to nondiscrimination in federally assisted programs.

## Authorization

Date \_\_\_\_\_

Claimant

Date \_\_\_\_\_

## Authorization

Date \_\_\_\_\_



# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

Each engine will strive to maintain itself at full strength at all times so as to be available for dispatch to an incident. The following outlines how the engine section handles leave (time off) for its members.

## **SICK LEAVE:**

Sick leave is non-compensated. Any member that will not be able to report to work due to illness or injury must contact their Battalion Chief or Division Chief and speak directly to him/her 15 minutes prior to your scheduled shift. If a member will not be able to work three or more consecutive shifts a physician's note may be required before returning to work.

## **PERSONAL LEAVE:**

Personal leave is non-compensated. Any member that will need to be excused from work for any period of time must schedule the time off through their Battalion Chief or Division Chief at least 24 hrs in advance (unless it is an emergency). If you can not report to work, you must call the office and speak to the Division Chief or Battalion Chief 15 minutes prior to your scheduled shift. **A call from a friend or message relayed by another crew member is not acceptable.**

If a member takes leave that is not approved they will be considered for termination.

## **TARDY:**

Members are expected to be ready to start working by the designated shift start time. Any member that arrives more than 5 minutes late for a shift will be considered tardy. Excessive tardiness could be grounds for dismissal. Crew members are also expected to contact their supervisor if they will be late.

## **NO SHOW:**

Any member that does not report for duty as scheduled and that does not contact their Battalion Chief or Division Chief will be considered a no show. As this is an "At Will" State, this will be considered as a quit notice. The member will be expected to return all issued equipment ASAP or will be charged for the items. If you do not report for work and have not called by the end of the work day, the process for termination will be initiated.

## **WALK OFF:**

Any member that leaves work during duty without permission will be considered a walk off. As this is an "At Will" State, this will be considered as a quit notice. The member will be expected to return all issued equipment ASAP or will be charged for the items.

**LIGHT DUTY:**

The engines do not normally have light duty assignments available. If a member is injured and requests light duty, every attempt will be made to locate a light duty assignment. If a light duty assignment is not available the member will be placed on unpaid leave.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section outlines the expectations for engine crew members' appearance and grooming.

## **APPEARANCE:**

Crew members will strive to maintain a positive and professional image at all times. The following list should be adhered to but is by no means all inclusive.

When arriving on an incident all crew members will be ready to go to work immediately.

Camping areas will be kept neat and tidy at all times.

Engines will be kept neat and tidy at all times (see 3-20).

Tools and gear will be stored in an organized fashion.

Foul language and horse play will be avoided.

In camp shorts, sandals and tee shirts may be worn. The Division Chief, Battalion Chief, and Engine Boss reserves the right to have a member change out of inappropriate clothing.

Members will be expected to wear wildland fire boots, Nomex pants, and SD Wildland Fire Suppression tee shirt or sweatshirt when on project or daily duty work.

When in "in-service" status the crew will remain fire ready at all times.

When responding to an incident, Nomex shirts will be donned prior to arrival on scene.

While driving crew members will be dressed in boots, Nomex pants and SD Wildland Fire Suppression tee shirt or sweatshirt.

Issued uniform items that are in need of replacement should not be worn. Members will contact their Battalion Chief or Division Chief for replacement items as needed.

## **GROOMING:**

Facial and head hair should be kept in an orderly fashion and must not interfere with work or the correct operation of personal protective equipment.

Jewelry will be kept to a minimum and must not interfere with work or the correct operation of personal protective equipment.

Personal hygiene is important to reduce the incidence of illness. Hands will be washed before meals as practical. On incidents where showers are available members are expected to take advantage of them as needed. The Battalion Chief, Division Chief, and Engine Boss reserve the right to counsel members who are in need of improved hygiene.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

The purpose of this section is to make clear the State of South Dakota stance on alcohol, tobacco and drug use.

## **DRUG USE**

Any member of the engine crew found to be under the influence of an illegal drug while on duty or on State or Federal property will be dismissed from the engine crew. Members who are required to take prescription drugs will notify their supervisor that they are taking a prescribed medication. All prescribed medications must be kept in their original containers. Any member taking a prescription medication that may alter their normal mental status may not operate vehicles or power equipment and may be relegated to non-line activities. A physician's certification of ability to perform may be required.

## **ALCOHOL USE**

Any member that consumes an alcoholic beverage while off-duty may not respond or report to duty within 8 hours of the last drink consumed. Any member found to be under the influence of alcohol while on-duty, will face disciplinary action. Members that are on a wildland fire assignment may not consume alcohol until released from the incident at the home unit.

## **TOBACCO USE**

Any member of the engine crew found to be chewing tobacco or smoking cigarettes while on duty on State property will face disciplinary action.

## **DRUG AND ALCOHOL TESTING**

The Wildland Fire Suppression Division reserves the right to conduct drug and alcohol testing on engine members at any time.

## **DEFINITIONS**

State Property: All property or portions thereof owned by the State of South Dakota under the direction and control of the Governor and all real property leased by the State where the State is the sole occupant. . Work sites are also considered State property while work is being performed.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section outlines the engine crews' stance on personal phone calls while on duty.

## **POLICY:**

In order to maintain a focused work environment, personal calls will be limited to the following.

Members may utilize the office phone for personal use with the approval from the Battalion Chief or Division Chief.

Personal cell phones will be utilized in a manner that does not affect job performance. Cell phones should be left in the silent or vibrate mode while working.

If a family member needs to contact an employee for a true emergency and they are unable to do so by other means, then they may contact Great Plains Interagency Dispatch and have the Battalion Chief or Division Chief contacted.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section covers corrective actions that may be needed from time to time.

## **POLICY:**

Seasonal engine crew members are considered "At Will" employees and as such may be terminated at any time without cause.

When a member has created a violation of policy the supervisor has several options available to help correct the problem.

Minor violation (tardy, did not follow directions, etc)

Verbal warning, written warning or extra PT

Moderate violation (obvious policy violation, poor attitude, etc)

Written warning , suspension without pay or extra PT

Major violation (safety, fighting, intoxicated, etc)

Written warning, suspension without pay, or consider dismissal.

Note: More than three written warnings will be cause for termination.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **Purpose:**

This standard is designed to provide some basic terminology used by wildland firefighters.

## **Terminology:**

Air Tanker- Fixed-wing aircraft certified by the FAA as being capable of transport and delivery of fire retardant solutions.

Anchor Point- An advantageous location, usually a barrier to fire spread, from which to start constructing a fireline. The anchor point is used to minimize the chance of being flanked by the fire while the line is being constructed.

Attack Line- Line of hose on an engine or water tender, used to fight or attack the fire directly.

Backfire- A fire set along the inner edge of a fireline to consume the fuel in the path of a wildfire and/or change the direction of force of the fire's convection column.

Black- an area of burned fuel.

Black Line- Fuel between the fireline and the fire that has been burned out. Line is not complete until fuel is burned out between the fireline and the fire.

Blivit- Collapsible, enclosed water tank used for fire suppression.

Burning Out- Setting fire inside a control line to consume fuel between the edge of the fire and the control line.

Cold Trailing: A method of controlling a partly dead fire edge by carefully inspecting and feeling with the hand for heat to detect any fire, digging out every live spot, and trenching any live edge.

Containment- When a fire is encircled by a fireline, but not under control.

Control- To complete a fireline around a fire, and cool down all hot spots that are immediate threat to the control line.

Direct Attack: Any treatment applied directly to a burning fuel such as wetting, smothering, or chemically quenching the fire or by physically separating the burning fuel from the unburned fuel.

Double Female Coupling- Used to adapt the male end of a fire hose to become a female coupling.

Double Male Coupling- Used to adapt a female end of a fire hose to become a male coupling.



Faller- Sawyer.

Firing Out- The act of setting fire to fuels between the control line and main fire in burning out operations.

Foam- The aerated solution created by forcing air into, or entraining air in water containing a foam concentrate by means of suitably designed equipment or by cascading it through the air at a high velocity. Foam reduces combustion by cooling, moistening, and excluding oxygen.

Friction Loss- Pressure loss caused by the turbulent movement of water or solution against the interior surface of a fire hose, pipe, or fittings normally measured in pressure loss per length of hose of pipe.

Gated Wye- An appliance used to split a single male hose end into two male hose ends with each of the two ends having its own shut-off valve

Green- Unburned fuel.

Head- Pressure due to elevation of water. Equals 0.433 pounds per square inch (PSI) per foot of elevation. Back Pressure. (Approximately 0.5 PSI is required to lift water 1 foot in elevation)

Hose Lay- Arrangement of connected lengths of fire hose and accessories on the ground, beginning at the first pumping unit and ending at the point of water delivery.

Indirect Attack- A method of suppression in which the control line is located some considerable distance from the fires active edge. Generally used for fast moving or high intensity fires. The intervening fuel is usually burned out or backfired; but occasionally the main fire is allowed to burn to the line depending on conditions.

Initial Attack- The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent the further extension of the fire.

In-Service- Resources that are ready to respond to an emergency with-in a 5 minute timeframe.

Jackpot- an accumulation of fuel.

Knock Down- to reduce the flame or heat on the more vigorously burning parts of a fire edge.

Mop-up- Extinguishing or removing burning materials near control lines, felling snags, and trenching logs to prevent rolling after an area has burned, to make it fire safe, or to reduce the residual smoke.

Out-of Service- Resources assigned to an incident but are unable to respond for mechanical, rest, or personal reasons.

Patrol- (1) to travel over a given route to prevent, detect, and suppress fires. (2) To go back and forth vigilantly over a length of control line during and/ or after line construction to prevent slop-over, suppress spot fires, and extinguish overlooked hot spots.

Progressive Hose Lay- A hose lay in which double shut-off wye (y) valves are inserted into the main line at intervals and lateral lines are run from the wyes to the fire edge, thus permitting continuous application of water during extension of the lay.

Reducer- a device used to reduce or adapt a larger hose into a smaller diameter hose.

**Safety Zone-** An area cleared of flammable material used for escape in the event the line is outflanked or in case a spot fire in the fuels outside the fireline causes the fireline to become unsafe. A Safety Zone is an area where firefighters can escape to where they can survive the passing of a fire front without the use of a fire shelter.

**Simple Hose Lay-** A hose lay consisting of consecutively coupled lengths of hose without laterals. The lay is extended by inserting additional lengths of hose in the line between pumps and nozzle.

**Staging Areas-** Locations set up an incident where resources can be placed while waiting for a tactical assignment on a three minute available basis. Staging areas are assigned within the Operations Section.

**Swamper-** Chainsaw operator helper or a firefighter that leads a bulldozer or other heavy piece of equipment.

**Water Buffalo-** Drinking water tank mounted on a trailer.

**Water Tender-** Any ground vehicle capable of transporting specified quantities of water.

**Wet Line-** Line that has been constructed using water or foam. Wet line is used to extinguish the flame front or to be used to fire out from.

**Wet Water-** Water with added chemicals that increase spreading and penetrating properties due to a reduction in surface tension.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section discusses how “in-zone” and “out-of-zone incident” assignments will be handled.

## **AVAILABILITY:**

LOCAL: Engines will always be listed as available “local” while not otherwise committed or out of service. This will enable an engine to be dispatched for incidents within the normal dispatch zone when they are “in-service” with Northern Great Plains Interagency Dispatch Center.

NATIONAL/REGIONAL: During the period from June 1 to October 31, engines may be available “national” based on current fire danger, local fire activity and local resource availability. While listed available for national assignments each engine crew member will ensure that they are ready to leave within 1 hour for a 14 day assignment excluding travel.

## **PAGER CALL:**

Each engine crew member is issued a pager so that they can be notified of a call back when off duty. When code “911” is displayed each member must respond to their duty station immediately to leave for an assignment.

## **INITIAL ATTACK:**

When on duty the engine crew will be ready to respond directly to a call for an initial attack incident. Once notified, the crew should be enroute to the incident within 5 minutes or less.

When off duty, the crew should be enroute within 1 hour or less.

## **EXTENDED ATTACK OR OUT OF ZONE:**

When on duty the engine will be ready to respond directly to a call for an extended attack assignment. Once notified the crew should be enroute within 30 minutes or less.

When off duty, the crew should be enroute within 1 hour or less.

Engine crew members will have their personal gear bag or “red bag” packed and on their engine at all times.

The above times may be adjusted if dispatch has ordered a specific arrival or departure time. Mobilization and travel should occur between the hours of 06:00 and 22:00. Crew members may need to rest over night (RON) if they can not reach their destination during the above times for mobilization.

### **MISSED ASSIGNMENTS:**

Members that are unavailable for assignment for any reason will report to their duty station according to their regular schedule. The Division Chief will attempt to locate a duty assignment within the agency. The member will be placed on unpaid leave until the engine returns if no work is available.

### **PER DIEM:**

As incidents are not normally scheduled events, it is very difficult for the state to pay for lodging and meals prior to an assignment. As such, each engine crew member will need to pay for meals and lodging themselves and request reimbursement upon return from the incident. Lodging receipts will need to be kept and turned in. Lodging and meals will be paid at the current state per diem rates. Lodging is not reimbursable on local assignments unless approved.

### **IDENTIFICATION:**

It is **REQUIRED** that all crew members carry a valid driver's license with them at all times. In addition, a current Red Card must be kept with each individual at all times.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section describes the procedure for personnel travel on commercial airlines to and from an incident.

## **POLICY:**

The Battalion Chief or Division Chief will be notified when it will be necessary to travel to an incident by air. Dispatch will make all of the flight arrangements and notify the Battalion Chief or Division Chief of all of the flight details. The Battalion Chief or Division Chief will ensure that all members arrive at the airport at least two (2) hours in advance of the flight.

Each member is required to have a valid state drivers' license in order to board the aircraft. Members that forget to bring a drivers' license will be dropped from the dispatch and may be terminated.

Each member will be allowed two (2) bags for travel;

- 1) Personal gear bag. This bag is designed to carry clothes, sleeping bag and tent. With the exception of a tent bag there will be no items on the exterior of this bag. This bag should not exceed 45 pounds in weight.
- 2) Line gear bag. This bag is designed to carry line gear, helmet and extra PPE. There will be no item on the exterior of this bag. This bag should not exceed 20 pounds in weight.

Both of these bags will be sent as checked baggage and will not be carried onto the aircraft unless otherwise advised by the airline officials. Members will not have any other checked baggage; the only exception will be the Engine Boss who is permitted to have soft sided brief case. Members can carry on an item that meets the airline standards for a "carry-on". The total weight of baggage is limited to 65 pounds per person.

Knives or multi-tools must be placed into the checked baggage and not carried on the aircraft. Line gear should have all hazardous materials removed before arrival at the airport (this includes fusee's, lighters, matches and anything fuel soaked). Water bottles will be transported empty.

Unless otherwise advised by the Battalion Chief or Division Chief all members traveling to or from any incident by aircraft will wear a crew tee shirt or sweat shirt.

It is the individual member's responsibility to ensure that they are correctly ticketed and checked in for the flight. As incident flights often require switching planes it is the individual's responsibility to ensure that they make all of the connecting flights and arrive at the end destination. If a member misses a flight or otherwise becomes delayed he/she must contact the Engine Boss immediately. If you can not contact the Engine Boss then the member must contact Great Plains Interagency Dispatch Center and advise them of the situation. If it is

found that the member intentionally missed a flight or was negligent, the individual may be responsible for the cost of arraigning alternate transportation and may be terminated.

During all phases of airline travel members will maintain a professional demeanor and treat all other travelers with respect. During the return flight from an incident all members will take a shower and wear clean clothes if at all possible out of respect for other travelers.

### **BUMP POLICY:**

It is not uncommon for airlines to overbook their flights and “bump” clients from the flight. When an airline is going to institute a “bump” they will first ask for volunteers, if they do not have any volunteers they will randomly pick passengers to “bump”.

While enroute to an incident members may NOT volunteer for a “bump”. If a member is “bumped” the airline must be immediately notified that the member is on official government business and enroute to an emergency and that transport cannot be delayed. If the member is still “bumped” from the flight, dispatch and the Engine Boss must be notified immediately. It will be the responsibility of the airline to make further travel arrangements for the member.

While enroute home from an incident members may NOT volunteer to “bump”. Per diem claimed because of a voluntary “bump” is not eligible for reimbursement by the State.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section outlines the day to day chain of command.

## **POLICY:**

Each engine crew member has a supervisor assigned to him/her. It is the responsibility of each member to know who they answer to and who to go see when their direct supervisor is unavailable. Whenever possible members should first contact their immediate supervisor to answer questions or resolve issues. If unavailable the member may contact the next level of supervision for assistance.

Supervisors instructions are to be followed at all times unless clearly illegal or unsafe. This is critical in fireline situations where discussion is not an option. If there is a serious disagreement with a supervisor in a situation other than above, you should do as instructed, and then bring the matter to them when done or arrange a meeting with the person involved and their supervisor.

## **WILDLAND FIRE COORDINATOR:**

Oversees all wildland fire operations within the state and is ultimately responsible for the operation of the Wildland Fire Suppression Division.

## **ASSISTANT CHIEF OF OPERATIONS:**

Oversees all aspects of the operations section of the Wildland Fire Suppression Division and ensures that all programs are meeting their stated goals and objectives.

## **DIVISION CHIEF:**

Oversees the fire management program for their area of operation (Lead, Rapid City, Custer State Park, Hot Springs) and is responsible for its efficient and safe operation.

## **BATTALION CHIEF:**

Responsible for the day to day operations of the fire management program for their area of operation and may act as FMO in his absence.

## **LEAD ENGINE BOSS:**

Lead Engine Bosses oversee daily work production, implements tactics and reports to the Battalion Chief or Division Chief.

**ENGINE BOSS**

Engine Bosses implement instructions and receive direction from a Lead Engine Boss.

**FIREFIGHTER:**

Entry level position.



# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section identifies what is to be considered unacceptable behavior within the engine crew.

## **POLICY:**

While it is acceptable to have a good time while working on an engine it is deemed unacceptable if that good time is at the expense of others or the good name of the engine crew. Members need to be aware that actions and statements that they consider normal may be considered inappropriate by others. It will be up to the Battalion Chief or Division Chief to determine if an action or statement was unacceptable. Crew members will treat everyone with whom they work or interact, with proper respect, regardless of position.

HOSTILE WORK ENVIRONMENT: A hostile work environment is one in which the member constantly fears that his/her job or well being is being threatened by another. No member will knowingly create a hostile work environment.

SEXUAL HARASSMENT: This exists when a member is receiving unwanted physical or verbal advances by another. Sexual harassment will not be tolerated and will be fully investigated.

FIGHTING: While disagreements will occur, they must never lead to arguments or physical violence.

USE OF DIVISION LOGO: Items bearing the state logo may not be worn in drinking establishments or other locations that may reflect poorly upon the crew.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE**

This section outlines the procedure for maintaining daily status with Great Plains Interagency Dispatch Center

## **PROCEDURE**

The Battalion Chief, Division Chief, or designee from each district will web status, call, fax or e-mail the daily status form to Great Plains Interagency Dispatch Center (GPC) no later than 0900 each day from March 15<sup>th</sup> – October 31<sup>st</sup>, times of severity or inclement weather may alter this need.

Engines will contact GPC via radio when they are available for initial attack and place themselves “in service” and give GPC their legal location. Engines will also contact GPC when they have a “significant” change of location (more than 5 miles) or change of availability status. Engines are to contact GPC at the end of their shift to notify GPC they are “out of service” for the day. Resources not going out of service at the end of the day will be contacted by the State Duty Officer to check their status and ensure they have safely returned to their duty station.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE**

This section outlines the requirements for the facilitation and content of the daily briefing.

## **POLICY**

On all days that engines are staffed, a crew briefing will take place by either the Battalion Chief or Division Chief. In their absence the Assistant Chief of Operations or State Wildland Fire Coordinator may conduct the briefing via phone or radio. This briefing will take place no later than 10:00 AM in the morning, or before crews leave the station for patrol or field work.

The briefing will consist of a minimum, the following items: The morning fire weather zone forecast, any possible fire weather watches or red flag warnings, current fire danger, Great Plains Dispatch Morning Report, "*Six Minutes for Safety*" message, and any changes to the local radio communications plan. The officer in charge can add any item which is deemed appropriate to the briefing.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE**

This section describes the Division's commitment to safety.

## **POLICY**

The single most important measure of a successful season is a crew's safety record. Our goal is to be accident free. Safety is an attitude and a state of mind, not just procedures to avoid injury. Our exposure to injuries and even fatalities demands that everyone be dedicated to safety. All assignments have hazards, and a safe work environment results when everyone does the job right. Hazards cannot be eliminated, but they can be mitigated. Speak out if something looks wrong! Learn and observe the 10 "Standard Fire Orders", 18 "Watch Out Situations" and "Downhill Line Construction Principles".

Engine crew members will perform their duties in a safe manner at all times. Members will follow all applicable safety procedures and wear appropriate safety equipment at all times. Members that knowingly disregard safety procedures may be terminated.

The crew will actively adhere to the following safety procedures;

L.C.E.S.

Standard Fire Orders

18 Watch Out Situations

Applicable OSHA, NFPA and NWCG regulations

## **AFTER ACTION REVIEW**

In order to learn from each incident, and to ensure that all safety procedures were followed; an after action review will be conducted after each incident or at the end of each operational period.

The following will be discussed during the after action review:

What was planned?

Review the primary objectives and expected action plan.

What actually happened?

Review the day's actions:

Identify and discuss effective and non-effective performance.

Identify barriers that were encountered and how they were handled.

Discuss all actions that were not standard operating procedure, or those that presented safety problems.

Why did it happen?

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Discuss the reasons for ineffective or unsafe performance. Concentrate on WHAT, not WHO is right.

What can we do next time?

Determine lessons learned and how to apply them in the future

## **SITUATIONAL AWARENESS**

Pay attention at all times to:

- Your actions
- Your attitude
- Your surroundings; topography, fuels, weather
- Your co-workers
- Your objectives
- Tools and equipment

## **FIRE ORDERS**

Engine crew members will be expected to follow the Standard Firefighting Orders at all times while on a fire.

1. Keep informed on fire weather conditions and forecasts.
2. Know what your fire is doing at all times.
3. Base all actions on current and expected behavior of the fire.
4. Identify escape routes and safety zones, and make them known.
5. Post lookouts when there is possible danger.
6. Be alert, Keep calm, Think clearly and Act decisively.
7. Maintain prompt communications with your forces, your supervisor and adjoining forces.
8. Give clear instructions and insure they are understood.
9. Maintain control of your forces at all times.
10. Fight fire aggressively, having provided for safety first.

## **WATCH OUT SITUATIONS**

Watch out situations should be avoided when possible. If it is not possible to avoid a watch out situation, then measures to mitigate the danger need to be taken. All personnel in the area of a watch out situation should be notified of the danger.

1. Fire not scouted and sized up.
2. In country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing the fire.
5. Uninformed on strategy, tactics and hazards.
6. Instructions and assignments not clear.
7. No communication link with crew members or supervisor.
8. Constructing line without a safe anchor point.
9. Building fireline downhill with fire below.
10. Attempting a frontal assault on a fire.
11. Unburned fuel between you and the fire.

12. Cannot see the main fire; not in contact with someone who can.
13. On a hillside where rolling material can ignite fuel below.
14. Weather becoming hotter and drier.
15. Wind increases and/or changes direction.
16. Getting frequent spots across the line.
17. Terrain and fuels make escape to safety zones difficult.
18. Taking a nap near the fire line.

## **LCES**

On all incidents LCES will be put into action.

### **Lookouts**

- Experienced and competent members
- Knowledge of crew locations
- Enough lookouts at good vantage points
- Knowledge of escape routes and safety zones
- Knowledge of trigger points
- Map / weather kit / watch / IAP / radio

### **Communications**

- Radio frequencies confirmed
- Backup procedures and check-in times established
- Provide updates on any situation change
- Sound alarm early, not late

### **Escape Routes**

- Avoid steep uphill route
- More than one route
- Scouted: Loose soil / Rocks / Vegetation
- Timed: Slowest person / Fatigue & temperature factors
- Marked: Flagged for day or night
- Evaluate: Escape time vs. rate of spread
- Vehicles parked for escape

### **Safety Zone**

- Survivable without a fire shelter
- Back into clean burn
- Natural Features: Rock areas / Water / Meadows
- Constructed Sites: Clearcuts / Roads / Helispots
- Scouted for size and hazards
- Upslope, Downwind, Heavy Fuels = More heat impact = Larger safety zone

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This Policy outlines the use of Job Hazard Analysis's (JHA) within the Engine crew. A JHA is an overview of a hazardous procedure and/or situation that may be encountered by crew members. The JHA outlines the hazards and ways to properly mitigate them. JHA's are to be developed well in advance of a member encountering the situation. Although the thought process may be utilized during emergency situations, JHA's are not designed to be developed during an emergency.

## **POLICY:**

A Job Hazard Analysis should be reviewed prior to working in a hazardous environment or unusual situation. Completed JHA's are available at [http://www.fs.fed.us/r1/people/jha/jha\\_index\\_www.html](http://www.fs.fed.us/r1/people/jha/jha_index_www.html)

JHA's should be reviewed with all personnel before working in the hazardous situation and should be made available for review to anyone who asks. Members performing hazardous work should follow the related JHA.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE**

The purpose of this section is to outline the required PPE for Wildland Firefighter use.

## **POLICY**

It is the individual members' responsibility to ensure that his/her PPE, either personal or assigned, is correct for the work they are performing. It is also the responsibility of the member to ensure that his/her PPE meet or exceed current standards. PPE must be worn as outlined below; individuals not wearing the proper PPE may be disciplined. Personal PPE items must be approved for wear by the Battalion Chief or Division Chief and will not be replaced if damaged or destroyed. Boots are not provided by the State but are a condition of employment. Full PPE will be used as necessary for specific project work.

## **UNDERGARMENTS**

Undergarments should be of natural fiber or Nomex construction. It is recommended that long sleeved tee shirts and underwear be utilized to reduce the burn risk from radiant heat.

## **PANTS**

Pants will be of Nomex or Nomex/Kevlar construction and will carry an NFPA compliance label. Pants will be either green or tan in color and should be in good repair.

Approved pants will be worn on all incidents.

## **SHIRT**

Shirts will be long sleeved and of Nomex or Nomex/Kevlar construction and will carry an NFPA compliance label. Shirts will be yellow in color and should be in good repair. Patches, (unless fire resistant) shall not be placed onto shirts. An approved shirt will be worn on all incidents with sleeves down.

## **BOOTS**

Boots will be of all leather construction with at least an 8 inch upper. Boots should have a lug sole and have a lace type closure. Steel in the boot should be avoided. Boots may be either black or brown and must be worn on all incidents unless advised otherwise. Boots will be provided by the member and are a condition of employment.

## **BRUSH COATS**

Brush coats will be of Nomex, Nomex/Kevlar or Indura cotton construction. Coat liners will be of the same construction. Coats should have reflective material on the front and back of the garment. Coats may be worn any time the member so wishes. Brush coats are not provided by the state.



## **NOMEX FLEECE**

Garments made of Nomex Fleece may be worn by members at any time. Nomex Fleece garments must carry a label stating that the garment is made of Nomex. Nomex Fleece garments are not provided by the state.

## **HELMET**

Helmets will be of plastic construction and will carry an NFPA compliance label. Helmets will have a chin strap and should have a Nomex shroud attached. Helmets may either be cap or hat style. Division stickers may be placed onto the helmet as authorized. Helmets will be worn at all times while on the fireline, or where there is a potential for falling debris.

## **NOMEX SHROUDS**

Shrouds are provided by the State and should be utilized as necessary.

## **EYE PROTECTION**

Eye wear utilized on the line will carry an ANSI compliance label. Eye protection will be worn anytime there is a risk of eye injury.

## **GLOVES**

Gloves will be of all leather construction. Gloves will be worn when handling tools and equipment, or where there is a risk of hand injury from sharp or hot objects. Task specific gloves may be worn if approved by the Battalion Chief or Division Chief.

## **EAR PROTECTION**

Ear protection will be carried with members at all incidents. Ear protection will be worn when operating power equipment, or when the ambient noise level is such that damage to ones hearing may occur.

## **FIRE SHELTER**

A fire shelter will be worn at all times while operating on the fireline. The fire shelter may be removed from the body while resting or operating a vehicle, but, must be within arms reach at all times.

## **EMBLEMS ON PROTECTIVE GARMENTS**

Other than Nomex embroidery and Nomex Patches, emblems will not be worn on protective garments. All logos and markings must be approved by the Battalion Chief or Division Chief.

## **CHAINSAW OPERATIONS**

Gloves, chaps, eye protection, ear protection, hardhat and long sleeve shirt will be worn while operating chainsaws.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section outlines the proper use of flagging on a Wildland fire or RX burn. It is the intent of the engine crews to closely follow NWCG standards for flagging.

## **POLICY:**

The following flagging guidelines should be followed whenever possible. If an incident has already established another flagging standard, that standard will supersede this standard while on that incident.

Yellow and Black striped – Denotes a special hazard. Should be marked with the hazard on the flagging (“Snag 100’ uphill”).

Hot Pink – Escape routes and safety zones. May be marked ESCAPE ROUTE.

Orange or Red – Line locating or travel path.

Blue or Green – As these colors tend to blend in with vegetation they should be avoided.

Structure Triage; For triage in the urban interface the following color patterns should be utilized. A single 3’ piece of flagging shall be located at the driveway entrance (normally on the mailbox). The date, time and crew name will be marked on the tape.

Green – Easily defensible or a stand alone structure.

Yellow – Defensible with some prep-work, mark the type of work needed on the flagging.

Red – Unsafe to defend without extensive prep-work.

Yellow and Black striped – Attach with triage color to identify a specific hazard on the site. Make sure to write the hazard on the flagging, (Large dog inside backyard fence).

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section establishes guidelines for the handling of medical emergencies during an incident. While aimed at firefighters, these guidelines may also be utilized for civilians experiencing a medical emergency.

## **POLICY:**

Members of the engine crew are only authorized to perform up to the level of their certification, advanced procedures are not permitted. If an incident has an established Medical Plan, that plan will supersede this section for the duration of the incident.

Injury and illnesses are described in three categories below. Personnel are asked to make a judgment on the severity of the injury or illness, when in doubt, error on the side of caution. It is better to have a minor injury evaluated by a Physician than to down play a potentially serious injury.

Minor – Requires minor First Aid only. Should be treated by on scene personnel and documented on the unit log. The individual's supervisor must be notified and a State of South Dakota First Report of Injury Form needs to be completed and submitted to the Bureau of Personnel.

Moderate – Requires treatment or follow-up from a Physician. Should be treated by on scene personnel and then transported by the most appropriate means to the closest medical facility capable of providing the required treatment by the most appropriate means. The individual's supervisor must be notified and a State of South Dakota First Report of Injury Form needs to be completed and submitted to the Bureau of Personnel.

Major – Requires immediate treatment from a Physician in a Hospital setting. Should be treated by on scene personnel and then transported to closest most appropriate emergency facility by the most appropriate means (consider air ambulance). Supervisor must be notified and a State of South Dakota First Report of Injury Form needs to be completed and submitted to the Bureau of Personnel.

In the event that a patient must be evacuated from the backcountry, consider utilizing Search and Rescue, they are appropriately trained and equipped to perform this task. If Search and Rescue is utilized during an active fire, they should be outfitted with the needed PPE and assigned at least one Single Resource Boss qualified individual.

## **FIRST REPORT OF INJURY/WORKERS COMPENSATION**

Seasonal employees should carry a copy of the State of South Dakota Wildland Fire Suppression Division Workers Compensation Information Card listed below with them at all times.

### **State of South Dakota** Wildland Fire Suppression Division Workers Compensation Information Card

Dear Health Care Provider,

This State employee is covered under the State of South Dakota's Worker's Compensation insurance for injury and/or illness associated with work. Please provide necessary exams and treatments. As this employee normally performs arduous firefighting duties, please send a notice back with the employee letting us know if they may return to full duty and when.

#### **IMPORTANT BILLING INFO**

*A medical report and bill for services must be mailed to Dakota Care within Fourteen (14) days of service.*

Dakota Care  
Attn: Worker's Compensation  
1323 S. Minnesota Ave.  
Sioux Falls, SD 57105

Questions should be directed to the Bureau of Personnel (605) 773-3148

#### **EMPLOYEE INFORMATION**

If you are injured at work, you have the right to seek medical treatment from the provider of your choice. You **MUST** notify your supervisor immediately if you are injured. Either your supervisor or you must complete an electronic "First Report of Injury" that can be found at [www.state.sd.us/bop/](http://www.state.sd.us/bop/), in the forms section.

While the State of South Dakota will cover the cost of medical treatment for legitimate claims, the State may deny a claim if it is deemed invalid. It is imperative that you complete all forms and follow the directions given to you by your supervisor.

Office / Work Address  
4250 Fire Station Road  
Rapid City, SD. 57703  
(605) 393-8011

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section outlines Wildland Fire Suppression Tactics that will be utilized.

## **POLICY:**

The crew will utilize the Fireline Handbook (FLHB) and the Incident Response Pocket Guide (IRPG) to assist with tactical decision making. LCES will always be put into effect prior to, and during fire suppression. Further information regarding engine tactics can be found in the Wildland Fire Suppression Tactics Reference Guide pages 153 – 164.

Specific policy may supersede the FLHB and IRPG in regards to suppression tactics.

# **South Dakota department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE**

This section states the Division's stance on the operation of power saws.

## **POLICY**

Only members who have completed a qualified S-212 course may operate a power saw. It is the responsibility of the member to ensure that all power saws are operated safely and correctly. All power saws must be returned to service in a fire ready state after each use.

## **CHAIN SAWS**

Only those members that are qualified as fallers may operate a chain saw, and only within the class (A, B & C) that they are qualified, or listed as a trainee for. In addition to Nomex clothing, the following must be worn at all times while operating a chain saw; helmet, eye protection, ear protection, gloves and Kevlar chaps that cover from the belt line to the tops of the boots. When carrying a saw the chain and bar will be covered to prevent injury.

Swampers need not be qualified as fallers (although desirable). Swampers will get a complete safety briefing from the faller prior to starting work. All swampers will wear the same protective equipment as the faller, chaps do not need to be worn if working greater than 10 feet from the saw.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

The engine operations section strives to provide a working environment where an individual may refuse an assignment based on safety concerns (whether real or perceived), without fear of reprisal.

## **POLICY:**

Every individual has the right and obligation to report safety problems and contribute ideas regarding their safety. Supervisors are expected to give these concerns and ideas serious consideration. When an individual feels an assignment is unsafe they also have the obligation to identify, to the degree possible, safe alternatives for completing that assignment. Turning down an assignment is one possible outcome of managing risk.

A “turn down” is a situation where an individual has determined they cannot undertake an assignment as given and they are unable to negotiate an alternative solution. The turn down of an assignment must be based on an assessment of risks and the ability of the individual or organization to control those risks.

Individuals may turn down an assignment as unsafe when:

There is a violation of safe work practices.

Environmental conditions make the work unsafe.

They lack the necessary qualifications or experience.

Defective equipment is being used.

The individual will directly inform their supervisor that they are turning down the assignment as given. The most appropriate means to document the turn down is using the criteria (Fire Orders, Watch Outs & LCES) found in the Risk Management Process located in the Fireline Handbook, Incident Response Pocket Guide and specific Job Hazard Analyses’.

The Supervisor will notify the Safety Officer immediately upon being informed of the turn down. If there is no Safety Officer, notification shall go to the appropriate Section Chief or to the Incident Commander. This provides accountability for decisions and initiates communication of safety concerns within the incident organization.

If the supervisor asks another resource to perform the assignment, they are obligated to inform the new resource that the assignment has been turned down and the reasons for the turn down.

If an unresolved safety hazard exists or an unsafe act was committed, the individual should also document the turn down by submitting a SAFENET (ground hazard) or SAFECOM (aviation hazard) form in a timely manner.

These actions do not stop an operation from being carried out. This procedure is integral to the effective management of risk, as it provides timely identification of hazards to the chain of command, raises risk awareness for both leaders and subordinates, and promotes accountability.



# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE**

This section outlines the Division's stance on the operation of engines.

## **POLICY**

Only authorized members may operate State vehicles. When no authorized drivers are available, a member may be given special permission to operate a State vehicle from the I.C. or any state supervisor. Crew members must have completed S-216 or S.D.W.F.S. vehicle operator course and have a valid drivers' license.

## **NORMAL OPERATION**

When operating a state vehicle, emergency operation or not, the driver will follow all current state and local driving regulations. Headlights will be on at all times while the vehicle is in motion. Seat belts will be worn at all times by all occupants while the vehicle is in motion.

## **EMERGENCY OPERATION**

In instances where a state fire vehicle is to be driven with lights and siren, the following will be adhered to.

All emergency lights must be activated while the vehicle is in motion.

The siren will be activated when emergency lights are activated.

The vehicle will not be driven at a speed greater than the posted speed limit or will not be driven faster than conditions will allow for, (whichever is least).

The vehicle will come to a complete stop at all red lights and stop signs before proceeding through.

## **EMERGENCY LIGHT USE:**

Emergency lights should be utilized as follows;

When parked well off the roadway: Lights should be off

When parked on the shoulder of a roadway: Vehicle flashers or rear emergency lights

When blocking all or part of the roadway: All emergency lights should be on

Driving in smoke or dust: All emergency lights should be on

Requested to respond emergent to an incident: All emergency lights should be on

Heavy traffic on an incident: All emergency lights should be on

Emergency lights can be utilized anytime the use of such lighting may mitigate a safety issue.

## **BACKING**

Whenever a vehicle is backing, a guide will be placed where visible to communicate with the driver and ensure that hazards are avoided. If a second person is not available, the driver will conduct a walk around of the area to identify hazards.

## **WORK – REST REGULATIONS:**

No driver will spend more than 10 hours behind the wheel in a day. Drivers may switch out at any time but the vehicle will not be driven for more than 16 hours in a day total. Travel should not occur between the hours of 22:00 and 06:00. These hours may be violated if there is a safety concern or during initial attack where lives may be endangered. If the work rest ratio is violated it must be documented and justified.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE**

The purpose of this section is to describe the requirements for the operation and maintenance of SD Wildland Fire Suppression engines.

## **POLICY**

All personnel with the responsibility of driving state vehicles, or state leased vehicles will have a valid drivers license with proper endorsements and will have successfully completed Driving for the Fire Service (S-216) or the SD Wildland Fire Suppression sanctioned Engine Driver/Operator Course. All engines are the property of the State of South Dakota and will be operated by a licensed driver. Engines will not be utilized for personal use.

The following should be adhered to while operating SD Wildland Fire Suppression engines.

- Headlights on
- Radios turned to designated radio frequency/talk group
- Chock parked vehicles when unattended
- Use a spotter and sound horn at all times when backing (unless equipped with back up alarm)
- Use seatbelts
- Will be locked and fueled at the end of each shift
- Fuel will be kept at or above  $\frac{3}{4}$  of a tank
- Keys will be left in the ignition when parking on the fireline
- Nothing goes out the windows while driving
- No smoking in vehicles
- Eating in the engines should be kept to a minimum and every effort should be made to avoid eating in the engines
- Rotate drivers often on long trips

The driver is responsible for ensuring the maintenance of the assigned vehicle. The SD Wildland Fire Suppression Fire Vehicle/Apparatus Notebook will be used to ensure all engines are maintained in a state of readiness.

All engines will have a written inventory on the engine. Each engines' inventory will be checked every month at a minimum.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

This section outlines how the Battalion Chief or Division Chief will issue equipment to their members.

## **POLICY:**

Equipment will be issued to members following the guidelines below. It is the responsibility of the individual to ensure that they have all of the needed items for a fire assignment.

## **CREW MEMBERS:**

Crew members are eligible to receive the following items for use while on the engine crew. Other items may be assigned as needed. All items must be returned upon separation from the engine crew. If a member fails to return any item they will be prosecuted for misappropriation (theft) of State equipment.

- Helmet
- Shroud
- 2 Nomex pants
- 2 Nomex shirts
- Fire Line Pack
- Gloves
- Goggles
- Safety glasses
- Headlamp
- Fire Shelter
- First Aid kit
- 6 Water bottles
- Bastard file
- MRE
- 4 Fusee's
- 1 Red Bag
- Pager
- 3 Tee Shirts

## **OTHER STATE EQUIPMENT:**

All State or Federal equipment that a member comes in contact with will be treated with respect. Members may be held financially responsible for damage to equipment while in their care.

**REPLACEMENT:**

If issued gear becomes unusable due to normal wear and tear, it may be replaced at no cost to the member. If issued gear becomes unusable due to misuse or negligence, the member may be held responsible for replacement costs. The member will be responsible for replacement costs of any issued item not returned upon separation. The Division will not replace non-issued personal gear.

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE:**

In order to ensure that each engine crew member has the proper equipment with them to safely complete an assignment, the following gear guidelines have been established.

## **LINE GEAR STANDARDS:**

Items with an \* are considered required and must be in each members line gear at all times. All other items are recommended and may or may not be carried by the member.

- \* Headlamp with extra batteries
- \* 1 Gallon water (4 quarts, 4 liters)
- \* Fire Shelter
- \* Tool file
- \* Goggles
- \* 2 Sets ear plugs
- \* 4 Fusees
- \* First Aid Kit
- \* Watch or clock
- \* Knife / Multi-Tool
- \* Lighter or matches
- \* Enough food for 1 meal
- \* Pen and paper
- Rain gear
- Extra boot laces
- Compass
- Signal mirror
- Extra gloves
- Sun block
- Toilet paper
- Water purification tabs
- Survival blanket

## **RED BAG STANDARDS:**

Items with an \* are considered required and must be in each members "Red Bag" at all times. All other items are recommended and may or may not be carried by the member. Red Bags will be packed and kept on the engine at all times.

- \* Sleeping bag
- \* Tent
- \* Copy of Red Card and Drivers Licensee

- \* Sleeping pad
- \* Tooth brush & paste
- \* Soap
- \* 5 Pair of socks (may pack more)
- \* 5 Pair of underwear (may pack more)
- \* 5 Tee shirts
- \* 1 Sweatshirt
- \* Towel
- \* Shower shoes (sandals)
- \* Deodorant
- \* Personal hygiene products
- \* Extra set of Nomex
- \* 1 set of cotton long underwear

Shorts

Swim trunks

Razor

Cold & Allergy medication

Copy of eye glass prescription

Extra prescribed medication

Eye drops

Camera

Flashlight

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE**

The purpose of this section is to state the Division's position on training standards.

## **POLICY**

It is the policy of the Division to follow current NWCG training standards. These can be found in PMS 310-1 and 901-1. Trainings that are not included in these documents will be reviewed for content and safe procedure before being taught. The Division will accept training certificates from other agencies so long as the courses met the current NWCG standards.

## **REQUESTED TRAINING**

Any member who wishes to attend an outside training course must submit an NWCG Nomination form to the Battalion Chief or Division Chief for approval. The trainee must meet the course prerequisites for approval. The Battalion Chief or Division Chief will either deny (with explanation and plan for improvement), or approve the trainee for attendance.

If the State is being asked to pay for tuition, room, board or transportation; then the Nomination and Travel Request form, with training announcement attached, shall be completed and turned in to the Training Specialist. If funds are available, the request shall be submitted by the Training Specialist to the appropriate parties for approval. If approved, the nominations shall be submitted to the course coordinator. This process may take some time to complete so requests need to be made at least 30 days prior to the nomination deadline.



## South Dakota Wildland Fire Suppression Seasonal Engine Crew Member Training Plan

	Year 1	Year 2	Year 3	Year 4	Year 5
Firefighter Training S-130	X				
Human Factors on the Fireline L-180	X				
Introduction to ICS I-100 (Internet)	X				
Firefighter Type I S-131		X			
Introduction to Wildland Fire Behavior S-190	X				
Initial Attack IC S-200				X	
Portable Pumps and Water Use S-211	X				
Wildland Fire Chain Saws S-212	X				
Fire Operations in the WUI S-215		X			
Driving for the Fire Service S-216	X				
Crew Boss S-230			X		
Engine Boss S-231			X		
Ignition Operations S-234			X		
Interagency Incident Business Mgt S-260				X	
Basic Air Operations S-270		X			
Intermediate Wildland Fire Behavior S-290			X		
Tactical Decision Making in Wildland Fire S-336					X
Intro to Wildland Fire Behavior Calculations S-390					X
ATV Training		X			

# **South Dakota Department of Agriculture Wildland Fire Suppression Engine Operations Section**

## **PURPOSE**

This section establishes the standard for physical fitness. The State wishes to ensure the longevity of its workforce through healthy living. The engine operations section also wishes to decrease the likelihood of an on duty injury or illness.

## **POLICY**

It is required that all engine crew members participate in a physical fitness program. Individuals should participate at a level that will maintain a minimum fitness level consistent with the ratings of an annual work capacity test. Personnel on light duty or injury leave should not participate while incapacitated.

## **RESPONSIBILITY**

The Battalion Chief or Division Chief will ensure that all members participate in physical fitness activities. Personnel shall wear approved athletic apparel and observe all safety rules during workouts.

## **PROGRAM ACTIVITIES**

Recognizing that crew members may be at varied levels of fitness, programs should be tailored to individual needs. The physical fitness program may consist of the following activities:

- Warm-up and flexibility exercises (stretch phase)
- Progressive resistance exercises (calisthenics/weight training phase)
- Aerobic exercises (cardiovascular phase)
- Cool-down exercises/stretchers (recovery phase)

## **TIME SCHEDULING**

Personnel may conduct physical training activities at any time during their shift. The Battalion Chief or Division Chief will attempt to schedule the physical training activity around other activities.

If physical training is superseded by a scheduled activity or an emergency occurs, the exercise period may be rescheduled. Every effort shall be made to allocate at least 30 minutes of aerobic exercise while on duty.

Physical fitness training must take place near the assigned duty office. Approved places include fire stations, parks, school grounds (when classes are not in session), trails, or any area where training will not interfere with the normal operation of the site or facility. Members exercising while on duty shall maintain radio contact at all times.

## **WORK CAPACITY TESTING**

Each member will be required to undertake, and pass an annual work capacity test. Members will be tested according to current NWCG standards and only at the level for which they wish to qualify. Members not

passing the work capacity test will be placed on suspension from duty until the test is passed. If after 2 weeks the member still cannot pass the test, the member will be terminated.

## **FITNESS GOALS**

All engine crew members should strive to meet or exceed the fitness goal within six (6) weeks of hire and maintain at least the base level throughout their employment. Members may be tested at any time during their employment. When the fitness standard testing is conducted, all of the stations must be completed within one (1) hour from start to finish. A break between stations will be given but should be kept to the minimum amount of time it takes to set up and start the next station.

**Run** – 1.5 miles in 11:41 minutes or less

**Sit ups** – 40 sit ups in 60 seconds or less

**Push ups** – 25 push ups in 60 seconds or less

**Chin ups** – Weight based;

Greater than 170 lbs – 4 chin ups

135 – 170 lbs – 5 chin ups

110 – 135 lbs – 6 chin ups

Less than 100 lbs – 7 chin ups

**South Dakota Department of  
Agriculture  
Wildland Fire Suppression  
Engine Operations Section**

**SOUTH DAKOTA ENGINE CREW MEMBER AGREEMENT**

I have read and understand the South Dakota Engine Operation Section Seasonal Handbook and agree to adhere to it.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Pre-Season Fitness Module: (6 weeks 'ramping up' with 2 weeks of transition to 'fire season' to total 8 weeks)**

**Objective:** Provides training to transition from a post-season maintenance program in preparation of the upcoming Fire Season Fitness Module. Initial concentration is on building muscle strength with a moderate cardiovascular component and transition to later focus on muscle endurance with a slightly increased cardiovascular component (including both moderate and vigorous intensity). Flexibility is a continuous focus during all phases.

This is the phase to prepare the mind and body for the final transition to fire season. The goal is for each individual to be fully prepared (physically and mentally) for the first day of the fire season. Mental Preparation/Fitness is a key component during this phase.

Each exercise component will be broken down using the F.I.T. Principal. F = frequency, I = intensity, T = time.

- **Cardiovascular:** during the course of the module, cardiovascular capacity will increase through the implementation of both moderate and rigorous intensity conditioning (cross training) to minimize injuries. Cardiovascular training should be done 4-6 days a week (*frequency*) with a duration of 30-60 minutes of activity (*time*) at an intensity of 70-85% (*intensity*) of the established Target Heart Rate (THR), 1-2 days of rest is highly encouraged for maximum results. Those beginning the program should start at the minimal F.I.T. level of 4 days a week, 30 minutes at 70% THR.

During the final 2-weeks of the pre-season module, cardiovascular fitness should include vigorous intensity conditioning 5-6 times weekly in preparation for the fire season work. This should include cross-training (to mitigate overuse injuries and boredom) while increasing the frequency and intensity levels. These activities should include work specific activities such as pack hiking. A minimum of 1 day of rest is still recommended.

- **Muscle Strength:** Muscle strength is developed by lifting loads exceeding 70% of your maximal strength, and lifting them as many times as possible. The first 6 weeks of the Pre-Season Fitness phase will include concentration on increasing muscle strength. A baseline fitness level should have been maintained throughout the Post-Season and muscles should be prepared to increase the load at this time. Muscle strengthening exercises should be done a minimum of 2 days a week (*frequency*) initially (first 2 weeks for beginners) and increasing to 3 days a week. Each exercise should be done for 8-12 repetitions using 70-90% of maximum weight (*intensity*) for 1-3 sets (*time*) with a 1-2 minute rest interval between sets. **Be sure to allow 48 hours between strength workouts to allow for recuperation of muscles.**
- **Muscle Endurance:** Muscle endurance is developed when lifting a lighter load, less than 70% of maximal strength, and lifting repeatedly. The last 2 weeks of the Pre-Season phase will encourage a transition again from the now achieved muscle strength phase to concentrating on muscle endurance for work hardening. The F.I.T. Principal stays pretty much the same as used in the muscle strength program other than an increase in the repetitions and change in weight. The objective here is to start concentrating on elongating the muscle fibers, building muscle endurance, and preparing the muscles for long duration tasks such as digging handline. Muscle endurance exercises should still be

done 3-4 days a week (*frequency*) but now increasing the repetitions to 12-20 reps using 50-70% of maximum weight (*intensity*) for 1-3 sets (*time*) with 1 minute intervals between sets. Circuit training can also be considered for this phase.

During the initial 6 week pre-season phase, calisthenics (push ups, chin ups, tricep dips, abdominals, back extensions, calf raises) are recommended in conjunction with the muscle strength and endurance exercises as long as caution is taken as not to 'overuse' the muscle groups and still allow for adequate recovery time. **Be sure to allow 48 hours between strength workouts to allow for recuperation of muscles.**

- **Flexibility:** Stretching will always be one of the most important components of any exercise program. Flexibility includes a good pre-exercise warm up and post exercise stretching regime and cool down. An appropriate warm up should consist of a slow activity such as jogging to warm up the muscles and large, limbering stretches to further prepare the muscles for activity. After the workout is complete, the body should slow and cool down allowing the heart rate to recover and end with slow, static stretches of each muscle group used during exercise. Each stretch should be held for 20-30 seconds using good breathing techniques and no bouncing.
- **Rest:** The body needs 1-2 days of rest per week during the Pre-Season Module with light or no activity to be done other than something fun and enjoyable. This will allow the muscles to recuperate and help mitigate overuse injuries.

**"Fire Fit" (muscular strength, cardio/aerobics)**  
**Pre-Season Fitness Module - Workout Template (weeks 1-6)**

<b>Fitness Component</b>	<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	<b>Day 4</b>	<b>Day 5</b>	<b>Day 6</b>	<b>Day 7</b>
<b>Cardiovascular:</b>							
• <u>Moderate Intensity</u>	Aerobic activity lasting 30 - 45 minutes		Aerobic activity lasting 30 - 45 minutes		Aerobic activity lasting 30 - 45 minutes	* Rest	* Optional Rest or team building activity
• <u>Vigorous Intensity</u>		Pack hike w/ gradual weight x 20-30 minutes		Pack hike w/ gradual weight x 20-30 minutes		* Rest	* Optional Rest or team building activity
<b>Muscular Training:</b>							
• <u>Muscle Strength</u>		Strength training, 70% + weight, 1-3 sets, 8-12 reps		Strength training 70%+ weight, 1-3 sets, 8-12 reps			* Optional Strength Training
<b>Flexibility:</b>	5-10 minutes	5-10	5-10 minutes	5-10 minutes	5-10 minutes	* Optional	5-10 minutes

## "Fire Fit"

### Pre-Season Fitness Module - Workout Template (weeks 7-8) (final 2 week transition to 'fire season' module)

Fitness Component	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
<b>Cardiovascular:</b>							
• <u>Moderate Intensity</u>	Aerobic activity lasting 45-60 minutes		Aerobic activity lasting 45-60 minutes		Aerobic activity lasting 45-60 minutes	* Rest	* Optional team building exercises
• <u>Vigorous Intensity</u>		Pack hike w/weight x 30 minutes (power hike)		Pack hike w/weight x 30 minutes (power hike)		* Rest	* Optional team building exercises
<b>Muscular Training:</b>							
• <u>Muscle Endurance</u>	70% or less max weight, 1-3 sets of 12-20 reps		70% or less max weight, 1-3 sets of 12-20 reps		70% or less max weight, 1-3 sets of 12-20 reps	* Rest	
<b>Flexibility:</b>	5-10 minutes	5-10 minutes	5-10 minutes	5-10 minutes	5-10 minutes	* Optional	5-10 minutes



## **Fire -Season Fitness Module: (24 weeks total during fire season)**

**Objective:** Provides continuous training during fire season to sustain the fitness levels established during the pre-season module. Fitness levels should be optimal at this point in order to maximize job performance, provide fatigue countermeasures, and provide injury prevention and mitigation.

This module will focus on continued cardiovascular training to utilize aerobic and anaerobic capacity, maintain muscle strength and endurance, and emphasize continued flexibility training. Due to the nature of fire season, it is important for crews to consider improvisation methods when out on incidents in order to maintain their fitness levels. Other items of importance during this module include:

- Crew cohesion/team building fitness methods
- Fitness Assessments
- Cross Training
- Muscle Balance
- Adjust for fatigue (fatigue countermeasures)
- Improvisation for field environment
- Minimize overuse injuries
- Promotion of continued wellness (nutrition, hydrations, stress relief, sleep)

Mental Fitness/Preparation continues to be a key component during this phase. Being Firefit requires a commitment to adhering to fitness which enhances both health and safety of teams and individuals. Team building exercises/activities should also be incorporated as part of the program.

Each exercise component will be broken down using the F.I.T. Principal. F = frequency, I = intensity, T = time.

- **Cardiovascular:** during the course of the module, cardiovascular capacity will be maintained through the continued use of both moderate and vigorous intensity conditioning (cross training) to minimize injuries and avoid boredom. Cardiovascular training should be done 5-6 days a week (*frequency*) with a duration of 45-60 minutes of activity (*time*) at an intensity of 80%-90% (*intensity*) of the established Target Heart Rate (THR).

Cross-training is encouraged in order to mitigate overuse injuries and boredom and support muscle balance. Anaerobic activities should include work specific activities such as pack hiking and activities that promote team building and crew cohesion. A minimum of 1 day of rest is still recommended.

- **Muscle Strength:** Muscle strength and endurance should already be established at this point and exercises continued to maintain those levels. It will be important to minimize the muscle strength exercises as not to add added bulk and weight. Once an individual has obtained the muscle strength needed to accomplish work related tasks, training should focus on muscle endurance and include calisthenics. Muscle endurance will be important especially for digging handline and other activities requiring long duration.

When implementing muscle strength exercises, they should be done a minimum of 3 days a week (*frequency*) and in combination with muscle endurance exercises. Each exercise should be done with 8-12 repetitions using 70-90% of maximum weight (*intensity*) for 2-3 sets (*time*) with a 1-2 minute rest interval between sets. **Be sure to allow for 48 hours between strength workouts to allow for recuperation of muscles.**

- **Muscle Endurance:** Muscle endurance will continue to be important during fire season and more easily maintained, especially in a field environment. Muscle endurance exercises should still be done 3-4 days a week (*frequency*) and can be combined with muscle strength exercises, completing 12-20 reps using 50-70% of maximum weight (*intensity*) for 2-3 sets (*time*) with 1 minute intervals between sets. Circuit training and calisthenics can also be considered for this phase.

During the Fire-season phase, activities such as calisthenics (push ups, chin ups, tricep dips) are highly recommended along with the muscle strength and muscle endurance exercises as long as caution is taken as not to 'overuse' the muscle groups and still allow for adequate recovery time. **Be sure to allow for 48 hours between strength workouts to allow for recuperation of muscles.**

- **Flexibility:** Stretching will always be one of the most important components of any exercise program. Flexibility includes a good pre-exercise warm up and post exercise stretching regime and cool down. An appropriate warm up should consist of a slow activity such as jogging to warm up the muscles and large, limbering stretches to further prepare the muscles for activity. After the workout is complete, the body should slow and cool down allowing the heart rate to recover and end with slow, static stretches of each muscle group used during exercise. Each stretch should be held for 20-30 seconds using good breathing techniques and no bouncing.
- **Rest:** The body needs 1-2 days of rest during the Fire-Season Module with light or no activity to be done other than something fun and enjoyable. This will allow the muscles to recuperate and help mitigate overuse injuries.

**"Fire Fit" (sustain fitness, mitigate injury, team building)**  
**Fire Season Fitness Module – Workout Template (24 weeks)**

<b>Fitness Component</b>	<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	<b>Day 4</b>	<b>Day 5</b>	<b>Day 6</b>	<b>Day 7</b>
<b>Cardiovascular</b>							
<u>Moderate Intensity</u>	Cross training activity lasting 45-60 minutes		Cross training activity lasting 45-60 minutes		Cross training activity lasting 45-60 minutes	* Rest	* Optional Rest
<u>Vigorous Intensity</u>		Crew hike or optional team building		Crew hike or optional team building exercises		* Rest	* Optional team building exercises
<b>Muscular Training</b>							
<u>Muscle Strength &amp; Endurance</u>	Incorporate calisthenics (abs, low back, triceps dips)	2-3 sets of 12-20 reps w/light - moderate weight	Incorporate calisthenics (abs, low back, triceps dips)	2-3 sets of 12-16 reps w/light - moderate weight	Incorporate calisthenics (abs, low back, triceps dips)	* Rest	* Rest
<b>Flexibility</b>	5-10 minutes	5-10 minutes	5-10 minutes	5-10 minutes	5-10 minutes	* Optional	5-10 minutes

\*\* Cross training and variety will be the important thing here as well as team building exercises

## **Fire -Season Fitness Module: (24 weeks total during fire season)**

**Objective:** Provides continuous training during fire season to sustain the fitness levels established during the pre-season module. Fitness levels should be optimal at this point in order to maximize job performance, provide fatigue countermeasures, and provide injury prevention and mitigation.

This module will focus on continued cardiovascular training to utilize aerobic and anaerobic capacity, maintain muscle strength and endurance, and emphasize continued flexibility training. Due to the nature of fire season, it is important for crews to consider improvisation methods when out on incidents in order to maintain their fitness levels. Other items of importance during this module include:

- Crew cohesion/team building fitness methods
- Fitness Assessments
- Cross Training
- Muscle Balance
- Adjust for fatigue (fatigue countermeasures)
- Improvisation for field environment
- Minimize overuse injuries
- Promotion of continued wellness (nutrition, hydrations, stress relief, sleep)

Mental Fitness/Preparation continues to be a key component during this phase. Being Firefit requires a commitment to adhering to fitness which enhances both health and safety of teams and individuals. Team building exercises/activities should also be incorporated as part of the program.

Each exercise component will be broken down using the F.I.T. Principal. F = frequency, I = intensity, T = time.

- **Cardiovascular:** during the course of the module, cardiovascular capacity will be maintained through the continued use of both moderate and vigorous intensity conditioning (cross training) to minimize injuries and avoid boredom. Cardiovascular training should be done 5-6 days a week (*frequency*) with a duration of 45-60 minutes of activity (*time*) at an intensity of 80%-90% (*intensity*) of the established Target Heart Rate (THR).

Cross-training is encouraged in order to mitigate overuse injuries and boredom and support muscle balance. Anaerobic activities should include work specific activities such as pack hiking and activities that promote team building and crew cohesion. A minimum of 1 day of rest is still recommended.

- **Muscle Strength:** Muscle strength and endurance should already be established at this point and exercises continued to maintain those levels. It will be important to minimize the muscle strength exercises as not to add added bulk and weight. Once an individual has obtained the muscle strength needed to accomplish work related tasks, training should focus on muscle endurance and include calisthenics. Muscle endurance will be important especially for digging handline and other activities requiring long duration.

When implementing muscle strength exercises, they should be done a minimum of 3 days a week (*frequency*) and in combination with muscle endurance exercises. Each exercise should be done with 8-12 repetitions using 70-90% of maximum weight (*intensity*) for 2-3 sets (*time*) with a 1-2 minute rest interval between sets. **Be sure to allow for 48 hours between strength workouts to allow for recuperation of muscles.**

- **Muscle Endurance:** Muscle endurance will continue to be important during fire season and more easily maintained, especially in a field environment. Muscle endurance exercises should still be done 3-4 days a week (*frequency*) and can be combined with muscle strength exercises, completing 12-20 reps using 50-70% of maximum weight (*intensity*) for 2-3 sets (*time*) with 1 minute intervals between sets. Circuit training and calisthenics can also be considered for this phase.

During the Fire-season phase, activities such as calisthenics (push ups, chin ups, tricep dips) are highly recommended along with the muscle strength and muscle endurance exercises as long as caution is taken as not to 'overuse' the muscle groups and still allow for adequate recovery time. **Be sure to allow for 48 hours between strength workouts to allow for recuperation of muscles.**

- **Flexibility:** Stretching will always be one of the most important components of any exercise program. Flexibility includes a good pre-exercise warm up and post exercise stretching regime and cool down. An appropriate warm up should consist of a slow activity such as jogging to warm up the muscles and large, limbering stretches to further prepare the muscles for activity. After the workout is complete, the body should slow and cool down allowing the heart rate to recover and end with slow, static stretches of each muscle group used during exercise. Each stretch should be held for 20-30 seconds using good breathing techniques and no bouncing.
- **Rest:** The body needs 1-2 days of rest during the Fire-Season Module with light or no activity to be done other than something fun and enjoyable. This will allow the muscles to recuperate and help mitigate overuse injuries.

**Post-Season Fitness Module: (2 weeks rest/minimal activity, 18 weeks baseline fitness – total = 20 weeks)**

**Objective:** Initially provides a transition from the fire-season program in order to allow time for rest and recuperation, and injury rehabilitation. After the initial 2 week rest/recovery phase, the program is designed to provide a transition to develop and maintain a baseline fitness level in preparation for the pre-season phase and optimal fitness.

The post-season module is also developed with flexibility in order to encourage cross-training and a diversity of activities that are fun and enjoyable. Initial concentration will be on identifying any injuries sustained during the fire season that need mitigation and/or rehabilitation. It will also allow for 2 weeks without training in order to allow the body to relax, physically and mentally. Once exercise is implemented, the primary focus will be on adhering to low impact cardiovascular activities, muscle balance, and good flexibility.

This is the phase to begin preparing the mind and body for the transition to the pre-season fitness module and eventually fire season. Mental fitness is critical to the success of a well balanced fitness program and includes focus and discipline.

Each exercise component will be broken down using the F.I.T. Principal. F = frequency, I = intensity, T = time.

- **Cardiovascular:** during the course of the module, cardiovascular capacity will increase slightly through the implementation of moderate and rigorous intensity conditioning (cross training) to minimize injuries. Cardiovascular training should be done 3-4 days a week (*frequency*) with a duration of 30-45 minutes of activity (*time*) at an intensity of 65-80% (*intensity*) of the established Target Heart Rate (THR), 1-2 days of rest is highly encouraged for maximum results. Those beginning the program should start at the minimal F.I.T. level of 3 days a week, 30 minutes at 65% THR.

A variety of activities are highly recommended for the cardiovascular conditioning phase of this module. This would allow for activities that are fun and enjoyable and applicable to the season. Examples include: cross country skiing, downhill skiing, snow shoeing, ice skating, and swimming!

- **Muscle Strength:** This module is designed for individuals that either need to slowly rehabilitate injuries or to promote muscle balance. Muscle strength exercises will be minimal to establish and maintain a baseline and prepare for the pre-season. Muscle strengthening exercises should be done a minimum of 2 days a week (*frequency*) initially (first 2 weeks for beginners) and increasing to 3 days a week later in the season. Each exercise should be done for 8-12 repetitions using 70-90% of maximum weight (*intensity*) for 1-3 sets (*time*) with a 1-2 minute rest interval between sets. **Be sure to allow for 48 hours between strength workouts to allow for recuperation of muscles.**

When doing muscle strength and muscle endurance exercises, it's very important to provide muscle balance by working the opposing muscle groups equally. This will help to mitigate injuries in the future. The post season phase should be used for this purpose.

- **Muscle Endurance:** Muscle endurance exercises are equally encouraged during the post-season phase and can be done in conjunction with the muscle strength exercises in order to provide diversity, muscle balance, and variety. Muscle endurance exercises should be done a minimum of 2 days a week (*frequency*) with 12-20 repetitions using 50-70% of maximum weight (*intensity*) for 1-3 sets (*time*) with 1 minute intervals between sets. Circuit training and calisthenics can also be considered for this phase.

During post-season phase, calisthenics (push ups, chin ups, tricep dips, abdominals, back extensions, calf raises) are recommended in conjunction with the muscle strength and endurance exercises as long as caution is taken as not to 'overuse' the muscle groups and still allow for adequate recovery time. Diversity and variety will be the key here. **Be sure to allow for 48 hours between strength workouts to allow for recuperation of muscles.**

- **Flexibility:** Stretching will always be one of the most important components of any exercise program. The post season phase should allow ample time to practice good stretching and always includes a good pre-exercise warm up and post exercise stretching regime and cool down. An appropriate warm up should consist of a slow activity such as jogging to warm up the muscles and large, limbering stretches to further prepare the muscles for activity. After the workout is complete, the body should slow and cool down allowing the heart rate to recover and end with slow, static stretches of each muscle group used during exercise. Each stretch should be held for 20-30 seconds using good breathing techniques and no bouncing.
- **Rest:** The body needs 2-3 days of rest during the Post-Season Module with light or no activity to be done other than something fun and enjoyable. This will allow the muscles to recuperate and help mitigate overuse injuries. This is especially important for those sustaining injuries needing special attention and rehabilitation.

**"Fire Fit" (rest/recuperation, maintenance program)**  
**Post-Season Fitness Module - Workout Template (18 weeks)**

<b>Fitness Component</b>	<b>Day 1</b>	<b>Day 2</b>	<b>Day 3</b>	<b>Day 4</b>	<b>Day 5</b>	<b>Day 6</b>	<b>Day 7</b>
<b>Cardiovascular:</b>							
• <u>Moderate Intensity</u>	Cross training activity lasting 30 - 45 minutes		Cross training activity lasting 30 - 45 minutes		Cross training activity lasting 30 - 45 minutes	* Optional Rest or fun activity	* Rest
• <u>High Intensity</u>	As appropriate		As appropriate		As appropriate		
<b>Muscular Training:</b>							
• <u>Muscle Strength/ Muscle Endurance</u>		Light - moderate weights, 1-3 sets, 8-20 reps or to failure	Optional calisthenics	Light - moderate weights, 1-3 sets, 8-20 reps or to failure	Optional calisthenics	* Optional Strength/ Muscle Endurance Training	* Rest
<b>Flexibility:</b>	5-10 minutes	5-10	5-10 minutes	5-10 minutes	5-10 minutes	* Optional	Rest

**first 2 weeks should be spent allowing the body to rest and recover before transitioning into the post-season program**